

**operating instructions**

**Portable Electronic Display Calculator**

**model**



# operating controls

Model

20

## Power switch

AC provides operation and battery charging simultaneously. DC provides portable operation only. For optimum battery charging, use • (or off position). Touch the **C** key to clear calculator, after turning it on.

## 10-key keyboard

Enter numbers as you would write them. Negative values are displayed with a negative symbol.

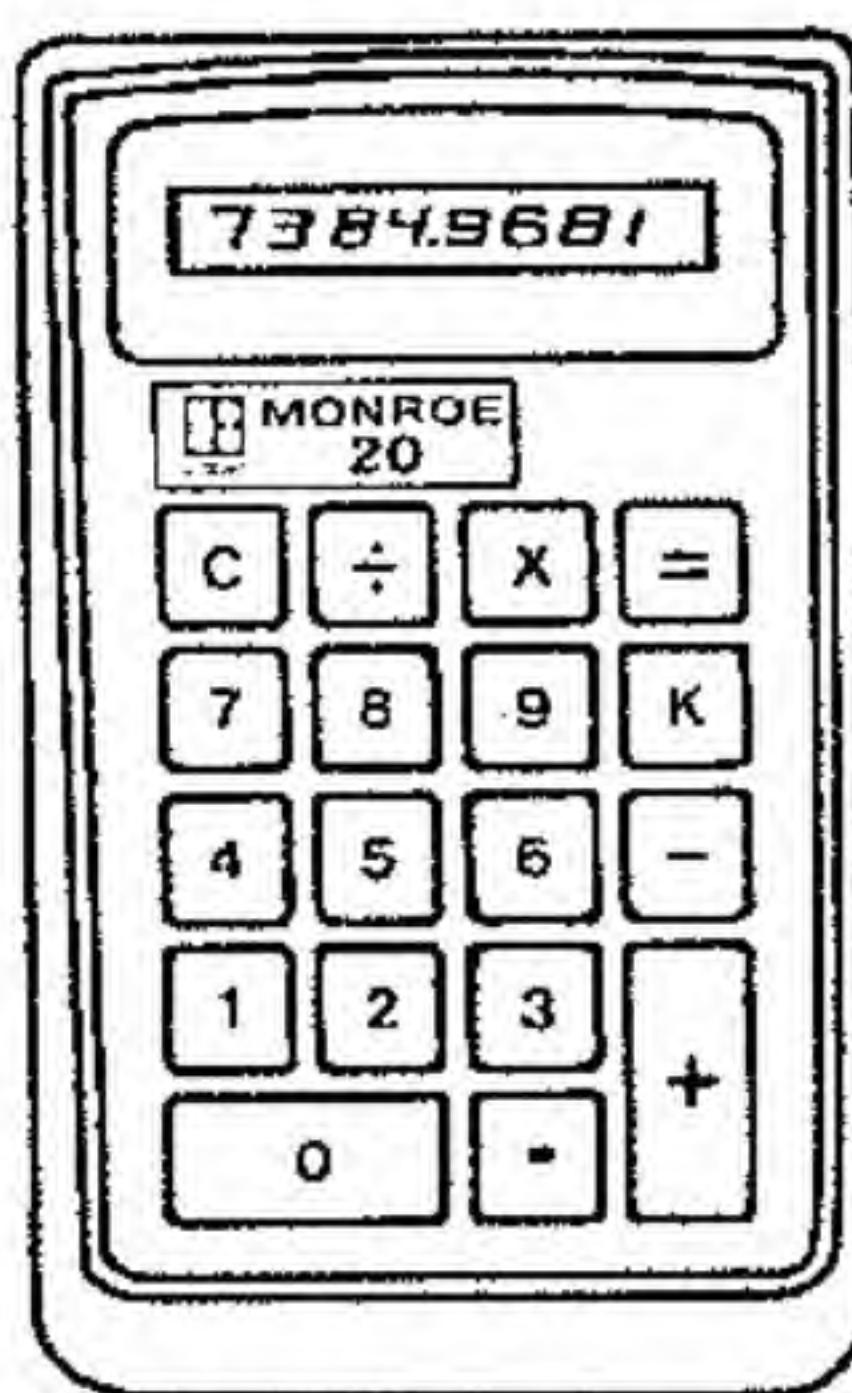
## Clear key

Clears an erroneous keyboard entry or an operation in progress.

If an incorrect digit entry is made in the first factor of a calculation, depress **C**, enter the correct digits and continue.

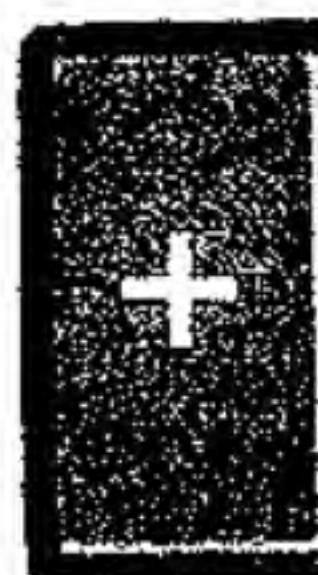
If an incorrect digit entry is made in any factor except the first factor in a calculation, depress **C**, then **depress the previous control key again (+ - × or ÷)**, enter the correct digits, and continue.

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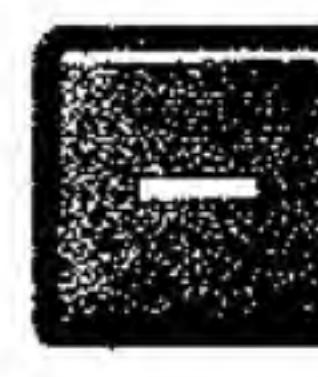
## Plus key

Prepares the calculator to add algebraically the next entry to the previous entry or result.



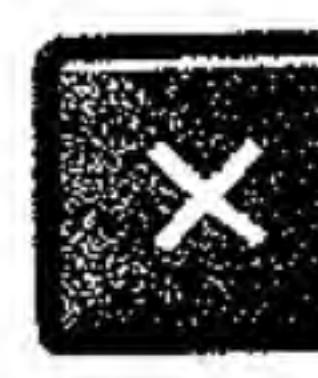
## Minus key

Prepares the calculator to subtract algebraically the next entry from the previous entry or result.



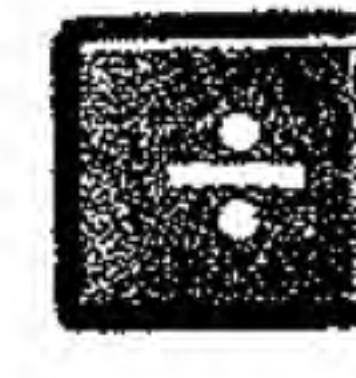
## Multiplication key

Enters the number in the display as a multiplicand and prepares the calculator to multiply it by the next entry.



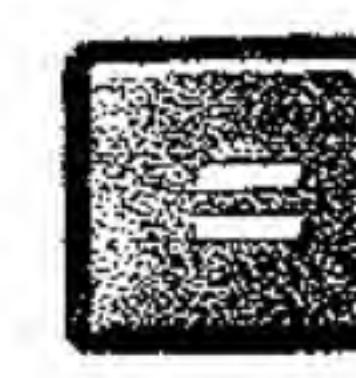
## Division key

Enters the number in the display as a dividend and prepares the calculator to divide it by the next entry.



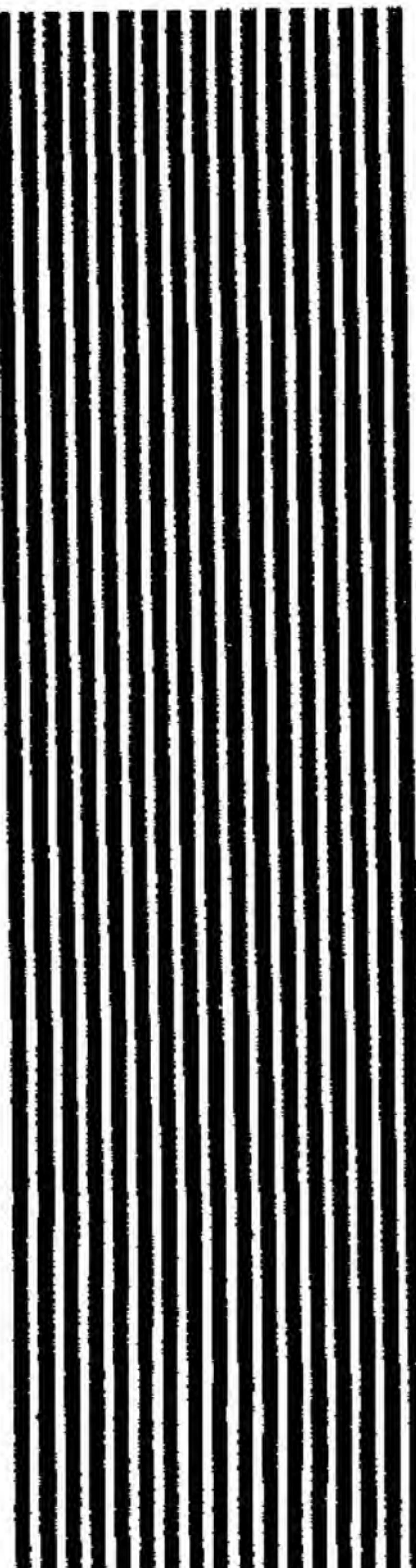
## Equals key

Completes any calculation.



## K key

Enter the number to be used as a constant and depress **= K**. The constant factor can be an addend, subtrahend, multiplier, or divisor.



## EXAMPLES AND INSTRUCTIONS

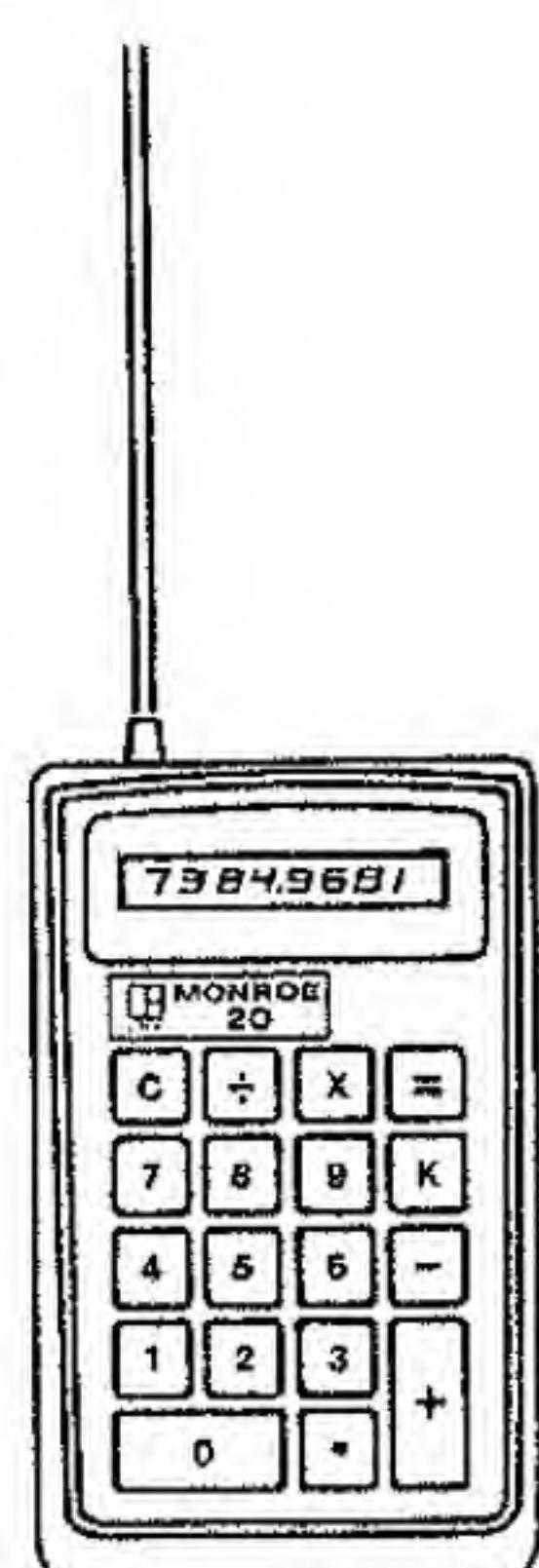
	Enter	Depress	Read		Enter	Depress	Read
<b>Multifactor calculations</b>							
$\frac{(1+2)4-5}{6} = 1.1666666$	1	+	1.0000000	$3^3 = 27.000000$	3	= K	3.0000000
	2	×	3.0000000			×	9.0000000
	4	-	12.000000			=	27.000000
	5	=	7.0000000				
	6	=	1.1666666				
<b>Constant factors</b>							
2 is the constant	2	= K	2.0000000	$\frac{1234}{(2+3+4)7} = 19.587301$	2	C	2.0000000
$12 \times 2 = 24.000000$	12	×	24.000000		3	+	5.0000000
$36 \times 2 = 72.000000$	36	×	72.000000		4	×	9.0000000
$15 \div 2 = 7.500000$	15	÷	7.5000000		7	=	63.000000
$8 \div 2 = 4.000000$	8	÷	4.0000000			K	63.000000
$6 + 2 = 8.000000$	6	+	8.0000000		1234	÷	19.587301
$12 - 2 = 10.000000$	12	-	10.000000				
Depress C to terminate a constant mode of operation. If an answer from a constant mode of operation is required for further calculation, depress C, depress the required control key (+, -, ×, or ÷), and proceed.							
The Monroe Model 20 operates with the true algebraic sign. For positive values no sign is displayed. For negative values a minus symbol appears to the left of the most significant digit.							
Decimal input/output is designed to give maximum decimal accuracy within the working capacity of the Model 20.							
Should an incorrect function key be used, depress the correct function key and proceed.							

## Charging the Battery

When the Monroe Model 20 approaches discharge, the display will flicker and then blank. No erroneous calculation will result when the batteries approach discharge. The flickering display is your sign to recharge the batteries.

### BC-5 Charger

To charge the 20, plug the BC-5 Battery Charger into the calculator (upper left side) and an AC outlet. It will reach full charge in five to seven hours with the power switch in the • or AC position.

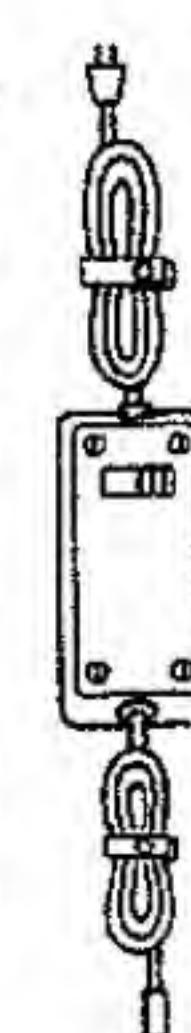


The lamp on the charger indicates that the batteries are being charged.

### BC-6 Multivoltage Charger

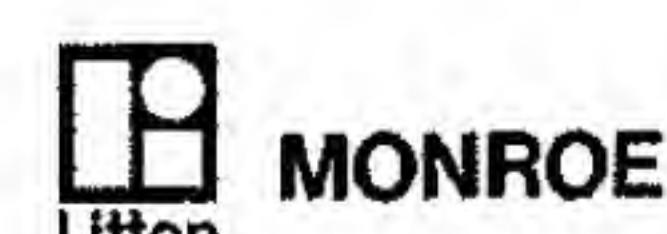
The BC-6 charger can be used on either 117 or 234 volts by moving the voltage switch to the appropriate position. To do this:

- Loosen the four corner screws
  - Carefully pull charger apart approximately 1 cm
  - Using a screwdriver, move switch to desired position
- Close charger and retighten the four screws.



The charger should not remain connected to the calculator after removal from an AC outlet as it will discharge the battery.

*This tightening must be done before connecting the charger to an outlet to avoid damaging the charger. If the plug on the BC-6 charger does not fit your wall outlet, purchase an adapter from a local supplier.*



## EXAMPLES AND INSTRUCTIONS

Enter   Depress   Read

### Addition and Subtraction

12.3			
+17.6	12.3	[+]	12.300000
-4.1	17.6	[−]	29.900000
<hr/>	4.1	[=]	25.800000
25.800000			

### Multiplication

$12.5 \times 4.7 = 58.750000$	12.5	[ $\times$ ]	12.500000
	4.7	[=]	58.750000

### Division

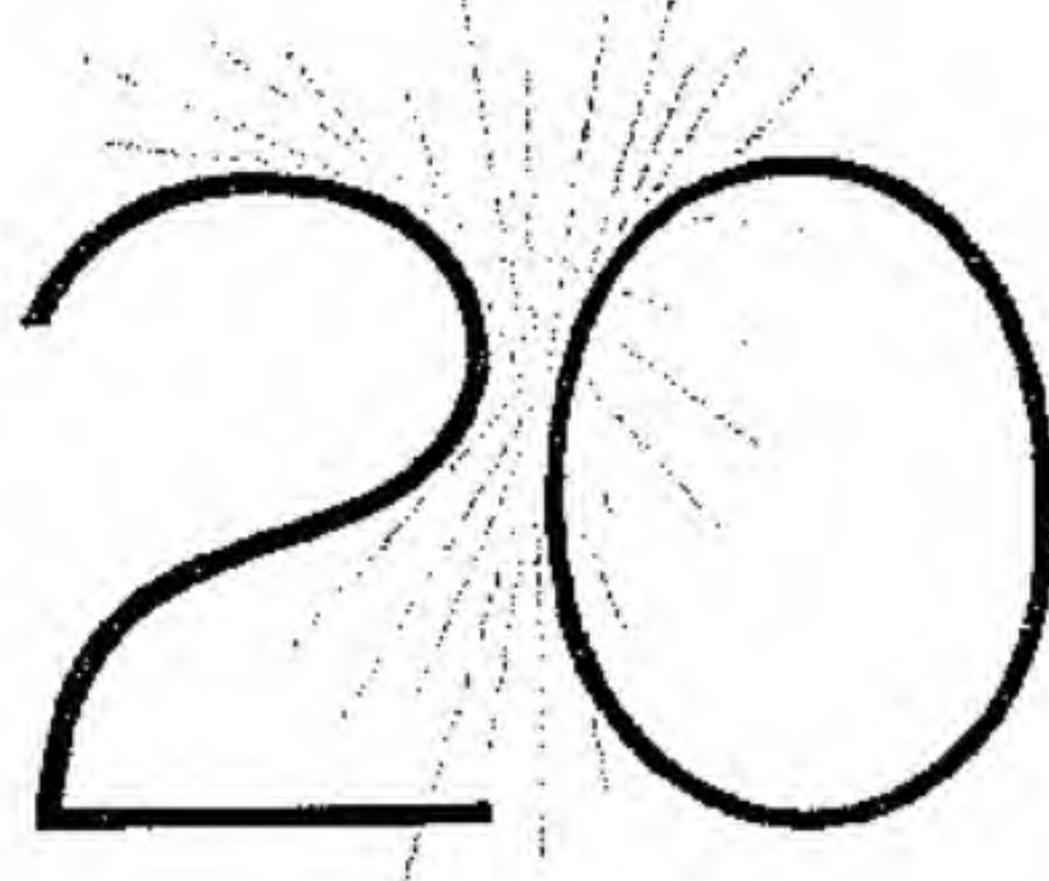
$5 \div 8 = 0.6250000$	5	[ $\div$ ]	5.0000000
	8	[=]	0.6250000

*continued*



*Service for your  
Model 20 is available  
at any of the 365  
nationwide Monroe offices.  
Consult the telephone  
directory yellow pages  
under Adding and  
Calculating Machines for  
the nearest office.*

model



**Portable  
Electronic Display  
Calculator**



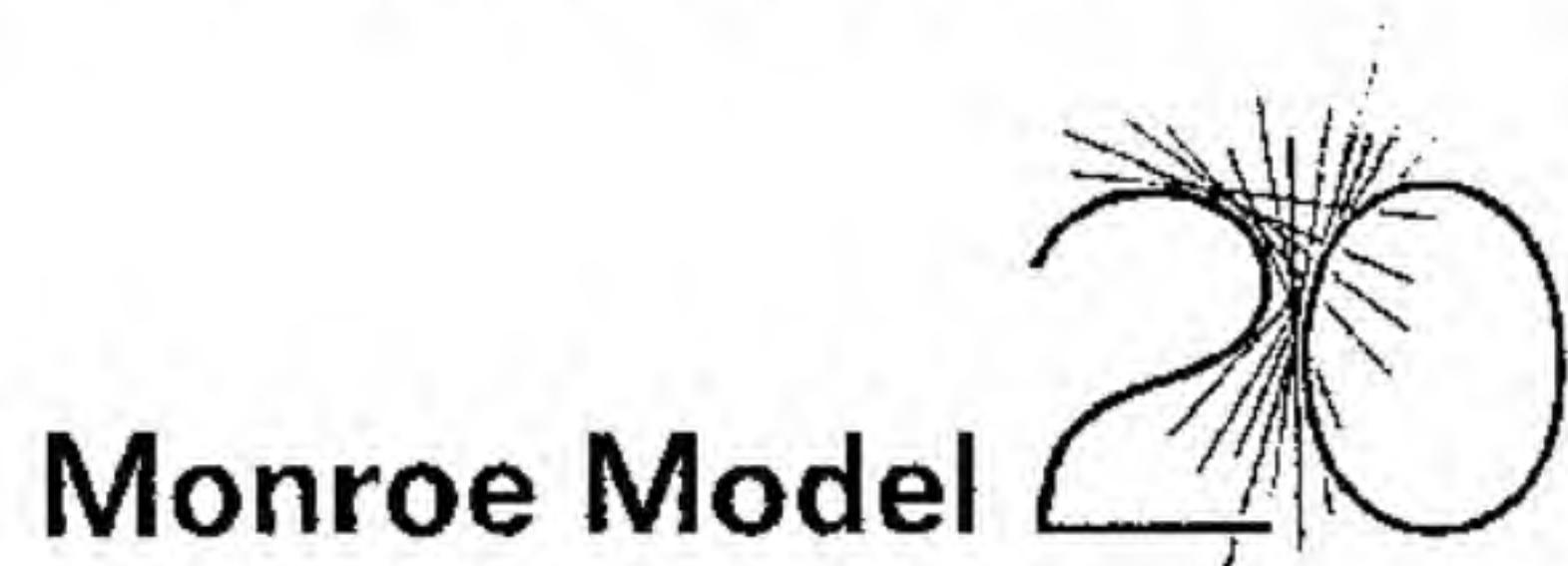
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## SPECIAL OPERATING TECHNIQUES



**Exponential capability** Although the Model 20 has an eight-significant-digit operating capacity, it offers a true decimal and whole number capacity of  $1.0000000 \times 10^{-20}$  to  $9.9999999 \times 10^{79}$ .

**Whole numbers** If a whole number entry or result exceeds the eight-digit capacity, no decimal point will be displayed. The first eight whole numbers will be displayed, but the true accuracy of the decimal point position will be maintained internally by means of a power of tens exponent. Once a whole number result is obtained in which no decimal point is displayed, determine the decimal position by dividing the result by powers of ten until the decimal point appears.

For example:

Enter	Depress	Read
12345678	$\times$	12345678.
54321	=	67062957
	$\div$	
10000	=	67062957.

Dividing by 10000 caused the decimal to be displayed to the right of the least significant digit of the result; therefore, the true decimal point was actually four places to the right of the least significant digit.

**Fractional numbers** If a fractional number entry is made in excess of the eight-digit operating capacity, the decimal point will stop advancing

*continued*

### **operating techniques — continued**

at the seventh digit position, but entry can continue until a significant digit has reached the eight-digit position. Although the decimal point will continue to be displayed at the seventh position, the true accuracy of the decimal point position will be maintained internally as in the previous whole number example.

When a fractional number result is obtained, the true position of the decimal point will be displayed. If few or no significant digits are displayed, a full eight may be recalled and their relationship to the decimal point maintained by multiplying the result by powers of ten until the desired number of significant digits is displayed. For example:

Enter	Depress	Read
1		00000001
	÷	1.0000000
81000006		81000006
	=	0.0000000
	×	0.0000000
10000000		10000000
	=	0.1234567

Multiplying by 10000000 caused the accurate significant digits to be displayed, with the decimal point to the left of the most significant digit, therefore, there are seven zeros separating the first significant digit from the decimal point.



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